

**WHAT IS CLAIMED IS:**

1. A method for treating waste material produced by an industrial plant for treating paper, wherein said waste material contains calcium in the form of one or more insoluble calcium compounds, said method comprising:

(A) treating said waste material with an acid to cause dissolution of the calcium, thereby forming a calcium ion-containing solution in which insoluble solids are suspended;

(B) separating the suspended insoluble solids from the calcium ion-containing solution in (A); and

(C) incinerating the insoluble solids obtained in (B), and wherein fibrous material in said waste material derived from effluent or sludge is not subjected to combustion or ignition prior to (A).

2. A method for treating waste material produced by an industrial plant for treating paper, wherein said waste material contains (a) calcium in the form of one or more insoluble calcium compounds, and (b) fibrous material, said method comprising:

(A) treating said waste material containing (a) calcium in the form of one or more insoluble calcium compounds and (b) fibrous material with an acid to cause dissolution of the calcium, thereby forming a calcium ion-containing solution in which insoluble solids are suspended;

(B) separating the suspended insoluble solids from the calcium ion-containing solution in (A); and

FINNEGAN  
HENDERSON  
FARABOW  
GARRETT &  
DUNNER LLP

1300 I Street, NW  
Washington, DC 20005  
202.408.4000  
Fax 202.408.4400  
www.finnegan.com

(C) incinerating the insoluble solids obtained in (B).

3. A method for treating waste material produced by an industrial plant for treating paper, wherein said waste material contains calcium in the form of one or more insoluble calcium compounds, said method comprising:

(A) treating said waste material with an acid to cause dissolution of the calcium, thereby forming a calcium ion-containing solution in which insoluble solids are suspended;

(B) separating the suspended insoluble solids from the calcium ion-containing solution in (A); and

(C) incinerating the insoluble solids obtained in (B).

4. A method for treating waste material waste produced by an industrial plant for treating paper, said waste material containing (a) calcium in the form of one or more insoluble calcium compounds and (b) fibrous material, the method including the steps of treating the material containing (a) calcium in the form of one or more insoluble calcium compounds and (b) fibrous material with an acid to cause dissolution of the calcium thereby forming a calcium ion-containing solution in which insoluble solids are suspended, separating the solution from the insoluble solids and incinerating the insoluble solids.

5. A method for obtaining kaolin from a waste material produced by an industrial plant for treating paper, comprising:

FINNEGAN  
HENDERSON  
FARABOW  
GARRETT &  
DUNNER LLP

1300 I Street, NW  
Washington, DC 20005  
202.408.4000  
Fax 202.408.4400  
www.finnegan.com

obtaining a composition comprising kaolin and combustible organic compounds, wherein said composition has been obtained by treating a waste material, produced by an industrial plant for treating paper, to remove calcium; and

subjecting said composition to at least one heat treatment process effective to incinerate said combustible organic compounds and calcine remaining particulate material, wherein said remaining particulate material comprises kaolin.

6. The method according to Claim 5, wherein said calcium has been removed from said waste material with a composition comprising at least one acid.

7. The method according to Claim 6, wherein said at least one acid is a dilute acid.

8. The method according to Claim 6, wherein said at least one acid is a mineral acid.

9. The method according to Claim 8, wherein said mineral acid is chosen from hydrochloric acid and sulfuric acid.

10. The method according to Claim 5, wherein the composition is subjected to at least one drying process prior to being subjected to at least one heat treatment process.

11. The method according to Claim 5, wherein the composition is subjected to at least one washing process prior to being subjected to at least one heat treatment process.

12. The method according to Claim 5, wherein said at least one heat treatment process is performed in an incineration device.

FINNEGAN  
HENDERSON  
FARABOW  
GARRETT &  
DUNNER LLP

1300 I Street, NW  
Washington, DC 20005  
202.408.4000  
Fax 202.408.4400  
www.finnegan.com

13. The method according to Claim 12, wherein said incineration device is a fluidized bed furnace.

14. The method according to Claim 5, wherein said at least one heat treatment process is performed at a temperature ranging from 800° C to 1200° C.

15. The method according to Claim 14, wherein said at least one heat treatment process is performed at a temperature ranging from 950° C to 1050° C.

16. The method according to Claim 15, wherein said at least one heat treatment process is performed at a temperature of 1000° C.

17. The method according to Claim 5, wherein following said at least one heat treatment process, said particulate material is subjected to at least one additional treatment.

18. The method according to Claim 17, wherein said particulate material subjected to at least one additional treatment is provided in a form chosen from a dry form and an aqueous suspension.

19. The method according to Claim 17, wherein said at least one additional treatment is chosen from comminution, particle size classification, washing, and the addition of at least one chemical agent.

20. The method according to Claim 19, wherein said comminution is performed by at least one of attrition grinding and media grinding.

21. The method according to Claim 19, wherein said at least one chemical agent is chosen from optical brightening agents and coagulants.

FINNEGAN  
HENDERSON  
FARABOW  
GARRETT &  
DUNNER <sup>LLP</sup>

1300 I Street, NW  
Washington, DC 20005  
202.408.4000  
Fax 202.408.4400  
www.finnegan.com

22. The method according to Claim 5, wherein the particulate material is provided to a paper mill.

23. The method according to Claim 22, wherein the particulate material is delivered to a paper mill in a form chosen from a dry form and an aqueous slurry form.

24. A filler comprising a product obtained by the process of Claim 5.

25. A paper composition comprising a filler according to Claim 24.

26. The filler according to Claim 24, wherein said filler is a paper-making filler.

27. The filler according to Claim 24, further comprising at least one additional filler.

28. The filler according to Claim 27, wherein said at least one additional filler is chosen from silicates, talc, calcium carbonate, calcium sulfate, and titanium dioxide.

29. The filler according to Claim 24, wherein said filler is in the form of a dilute slurry.

30. A polymer composition comprising a product obtained according to the method of Claim 5.

31. A coating composition comprising a product obtained according to the method of Claim 5.

32. A paint composition comprising a product obtained according to the method of Claim 5.

FINNEGAN  
HENDERSON  
FARABOW  
GARRETT &  
DUNNER <sup>LLP</sup>

1300 I Street, NW  
Washington, DC 20005  
202.408.4000  
Fax 202.408.4400  
www.finnegan.com

33. The method according to Claim 1, wherein said insoluble calcium compounds comprise at least one compound chosen from calcium carbonate, calcium sulphate, calcium phosphate, and calcium silicate.

34. The method according to Claim 1, wherein said calcium compound is calcium carbonate.

35. The method according to Claim 1, wherein said calcium ion-containing solution is treated to form a precipitate.

36. The method according to Claim 35, wherein said precipitate comprises an insoluble calcium compound.

37. The method according to Claim 36, wherein said precipitate is a calcium carbonate precipitate.

38. The method according to Claim 35, wherein said precipitate is formed by combining the calcium ion-containing solution with at least one substance chosen from an alkali metal salt, an alkali metal hydroxide, and carbon dioxide.

39. The method according to Claim 38, wherein said alkali metal salt is chosen from sodium salts.

40. The method according to Claim 38, wherein said alkali metal salt is sodium carbonate.

41. The method according to Claim 38, wherein said alkali metal hydroxide is sodium hydroxide.

42. The method according to Claim 35, wherein calcium carbonate is separated from said calcium ion-containing solution.

43. The method according to Claim 42, wherein said separation is performed with at least one method chosen from filtration, evaporation, separation via a hydrocyclone, and separation via a centrifuge.

44. A filler comprising a product obtained by the method of Claim 1.

FINNEGAN  
HENDERSON  
FARABOW  
GARRETT &  
DUNNER LLP

1300 I Street, NW  
Washington, DC 20005  
202.408.4000  
Fax 202.408.4400  
www.finnegan.com